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Symmetries of the q -difference heat equation. (English) Zbl 0805.39008

Lett. Math. Phys. 32, No. 1, 37-44 (1994).

The authors consider three q -difference analogs of the heat equation in one space dimension. The symmetry operators of these q -difference equations as well as relations defining a symmetry algebra are determined. (Note that all considered q -deformations of the heat equation have the same symmetry algebra). For the q -difference heat equation, which has symmetry operators of the simplest form, an interesting representation of solutions involving q -Hermite polynomials are obtained. For this purpose the authors perform the separation of variables associated to the dilatation symmetry.

Reviewer: E.Trofimtchouk (Kiev)

MSC:

[39A10](#) Additive difference equations

[81R99](#) Groups and algebras in quantum theory

[33D45](#) Basic orthogonal polynomials and functions (Askey-Wilson polynomials, etc.)

[33D80](#) Connections of basic hypergeometric functions with quantum groups, Chevalley groups, p -adic groups, Hecke algebras, and related topics

Cited in **3** Reviews
Cited in **11** Documents

Keywords:

q -difference heat equation; q -Hermite polynomials; symmetry operators; symmetry algebra; dilatation symmetry

Full Text: [DOI](#)

References:

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